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09/986,894	11/13/2001	Akira Yonemizu	215872US2	6142

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

MOORE, KARLA A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 07/01/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/986,894

Applicant(s)

YONEMIZU ET AL.

Examiner

Karla Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13, 14 and 22-37 is/are pending in the application.
- 4a) Of the above claim(s) 22-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) 1-11, 13 and 26-37 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 26-37 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Group 1, claims 1-25, and Group II, claims 26-37 are related as subcombination and combination.

2. The inventions are distinct, each from the other because of the following reasons:

3. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combination does not require that the main transfer mechanism is adjacent the apparatus (of claim 1)/heating and cooling unit (of claim 26), only that that it is capable of transferring the substrate between the first processing block and the apparatus (of claim 1)/heating and cooling unit (of claim 26). Further, the subcombination has separate utility by itself.

4. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits.

Accordingly, claims 26-37 are withdrawn from consideration as being directed to a non-elected invention.

See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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7. Claim 13 reads differently in the clean version and marked-up versions of the amendment. There is no additional information in the Remarks to provide further explanation. Examiner is unable to decipher what matter Applicant intends to amend in the claim. For the purposes of this action, Examiner has used the version presented in the clean version of the claims.

Claim Rejections - 35 USC § 102

8. Claims 1, 6 and 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,433,785 to Saito.

9. Saito discloses an apparatus disposed adjacent a main transfer mechanism (Figure 1, 1 and 2; for transferring substrates from the ambient; column 4, rows 34-37) for processing a substrate in Figure 1, comprising: a heating process chamber (6) in which a heating process is performed for the substrate (11); a load lock chamber (5), integrally connected to the heating process chamber in a predetermined direction (vertically upward), having an opening closable shutter (25) allowing the substrate to be transferred between the main transfer mechanism and the load lock chamber, and transferring the substrate between the main transfer mechanism and the heating process chamber through the opening (indirectly, through the load lock chamber), controlling at least oxygen concentration (via oxygen monitor 15) and pressure (via pump 24); a transferring arm (4) transferring the substrate between the heating process chamber and the load lock chamber; and a gate valve (8) shielding the heating process chamber from the load lock chamber.

10. With respect to claim 6, the apparatus further comprises: a supplier (not numbered, right side of process chamber) supplying an inert gas to the heating process chamber.

11. With respect to claim 8, the load lock chamber of the apparatus further comprises: an opening (houses shutter/gate valve 25) through which the substrate is transferred to/from the outside, and a shutter (25) allowing the opening to be opened and closed.

12. With respect to claim 9, the transferring arm further comprises a waiting portion (the holding portions for each of the substrates in the boat) in the load lock chamber for temporarily placing the substrate prior to entry into the heating chamber.

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13. With respect to the method limitations of claim 9, the courts have ruled that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F. 2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito as applied to claims 1, 6 and 8-9 above, in view of U.S. Patent No. 5,286,296 to Sato et al and U.S. Patent No. 6,083,566 to Whitesell.

16. Saito discloses the invention substantially as claimed and as described above.

17. However, Saito fails to disclose a first exhausting portion for vacuum exhaustion, a second exhausting portion for normal exhaustion and a selecting portion adaptively selecting the first exhausting portion or the second exhausting portion and causing the selected portion to operate.

18. Sato et al. disclose a load lock chamber comprising a first exhausting portion (12, turbo molecular pump) and a second vacuum exhaustion portion (13, booster pump) (column 4, rows 54-62; column 6, row 58 thru column 7, row 2; column 11, rows 10-15). The first and second exhausting portions connected to a chamber are provided for the purpose of reducing the chamber pressure to different vacuum levels; therefore, the chamber pressure can be set a desired value (abstract). The first and second exhausting portions are capable of reducing the inner pressure of a chamber to 1330 Pa or less (column 4, rows 57-59) and 100,000 Pa or less (column 5, rows 11-16), respectively.

19. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided first and second evacuation portions in Saito et al. in order to reduce the chamber to different vacuum levels, thus obtaining the desired chamber pressure as taught by Sato et al.

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20. Saito and Sato disclose the invention substantially as claimed and as described above.

21. However, neither Saito nor Sato teaches the use of a selecting portion for adaptively selecting a first exhausting portion or a second exhausting portion.

22. Whitesell teaches the use of first and second exhausting portions along with a controller for the purpose of controlling the two exhaust portions (column 4, rows 54-62; column 6, row 58 through column 7, row 2; and column 10, rows 50-55).

23. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a controller for the exhausting portions in the prior art in order to control the exhausting portions as needed as taught by Whitesell.

24. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito as applied to claims 1, 6 and 8-9 above, in view of U.S. Patent No. 4,389,970 to Edgerton.

25. Saito discloses the invention substantially as claimed and as described above.

26. However, Saito fails to disclose a controller for controlling the temperature of the heating process for the substrate in the heating process chamber. The controller capable of controlling the temperature in the range from 100 degrees C to 800 degrees C.

27. Edgerton teach the use of heating means and a detector for the purpose of controlling circuitry for continuously adjusting the intensity of the heating means to regulate substrate temperature (abstract). The controller is capable of controlling the temperature in the range of 100 degrees C and 800 degrees C (column 7, rows 7-11).

28. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a controller in Saito in order to regulate substrate temperature as taught by Edgerton.

29. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saito as applied to claims 1, 6 and 8-9 above, in view of Japanese Patent Publication No. 07-142408 A to Nakahigashi.

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30. Saito discloses the invention substantially as claimed and as described above.

31. However, Saito fails to teach the apparatus wherein the transferring arm has a temperature adjusting portion adjusting a temperature of the substrate placed thereon.

32. Nakahigashi teach the use of a heater embedded in transfer means for the purpose of preventing abrupt cooling of a substrate while being transferred (purpose and constitution).

33. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a temperature adjusting portion in the transferring arm in Saito in order to prevent abrupt cooling of a substrate as taught by Nakahigashi.

34. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saito as applied to claims 1, 6 and 8-9 above, in view of U.S. Patent No. 5,735,961 to Shimada.

35. Saito discloses the invention substantially as claimed and as described above.

36. However, Saito fails to teach a supplier supplying an active gas to the load lock chamber and a sprayer spraying the active gas to a front surface of the substrate in the load lock chamber so as to reform the front surface of the substrate.

37. Shimada teaches the use of an oxygen (active gas) supply pipe (Figure 1, 19; supplier) in communication with a gas supply pipe (11; sprayer) supplying oxygen to the load lock chamber connected to a heat process chamber for the purpose of generating a native oxide layer on wafers while loaded in the load lock chamber (column 4, rows 50-64 and column 5, rows 50-54).

38. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a supplier and sprayer in the load lock chamber in Saito in order to generate a native oxide layer in wafer while loaded in the load lock chamber as taught by Shimada.

39. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,433,785 to Saito in view of Japanese Patent Publication No. 07-142408 A to Nakahigashi.

40. Saito discloses the invention substantially as claimed, comprising: an apparatus disposed adjacent a main transfer mechanism (Figure 1, 1 and 2; for transferring substrates from the ambient;

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column 4, rows 34-37) for processing a substrate in Figure 1, comprising: a heating process chamber (6) in which a heating process is performed for the substrate (11); a load lock chamber (5), integrally connected to the heating process chamber in a predetermined direction (vertically upward), having an opening closable shutter (25) allowing the substrate to be transferred between the main transfer mechanism and the load lock chamber, and transferring the substrate between the main transfer mechanism and the heating process chamber through the opening (indirectly, through the load lock chamber), controlling at least oxygen concentration (via oxygen monitor 15) and pressure (via pump 24); a transferring arm (4) transferring the substrate between the heating process chamber and the load lock chamber; and a gate valve (8) shielding the heating process chamber from the load lock chamber.

41. However, Saito fails to teach the apparatus wherein the transferring arm has a temperature adjusting portion adjusting a temperature of the substrate placed thereon.

42. Nakahigashi teach the use of a heater embedded in transfer means for the purpose of preventing abrupt cooling of a substrate while being transferred (purpose and constitution). Examiner notes that the teaching in Nakahigashi of providing the temperature regulating means in order to "preventing abrupt cooling" implies that the transfer means does have cooling capability, just not "abrupt" cooling capabilities.

43. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a temperature adjusting portion in the transferring arm in Saito in order to prevent abrupt cooling of a substrate as taught by Nakahigashi.

44. With respect to claim 13, which is drawn to the intended uses of the process chamber and transfer arm, the courts have ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex Parte Masham*, 2 USPQ 2d 1647 (Bd. Pat. App. & Inter. 1987).

45. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saito and Nakahigashi as applied to claims 11 and 13 above, and further in view of U.S. Patent No. 5,735,961 to Shimada.

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46. Saito and Nakahigashi disclose the invention substantially as claimed and as described above.

47. However, the prior art fail to teach a supplier supplying an active gas to the load lock chamber and a sprayer spraying the active gas to a front surface of the substrate in the load lock chamber so as to reform the front surface of the substrate.

48. Shimada teaches the use of an oxygen (active gas) supply pipe (Figure 1, 19; supplier) in communication with a gas supply pipe (11; sprayer) supplying oxygen to the load lock chamber connected to a heat process chamber for the purpose of generating a native oxide layer on wafers while loaded in the load lock chamber (column 4, rows 50-64 and column 5, rows 50-54).

49. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a supplier and sprayer in the load lock chamber in the prior art in order to generate a native oxide layer in wafer while loaded in the load lock chamber as taught by Shimada.

Response to Arguments

50. Applicant's arguments filed 04/16/03 have been fully considered but they are not persuasive.

51. With respect to Applicant's argument that the transferring arm of Saito (Figure 1, 4) rotates rather than "moves in a predetermined direction", Examiner notes that at column 3, rows 53-55 the arm is taught as moving vertically. In this case, the arm moves vertically upward into the heating chamber.

52. Additionally, similar to the presently claimed invention, the substrate of Saito is not transferred directly to the main transfer mechanism (Figure 1, 1 and 2; for transferring substrates from the ambient; column 4, rows 34-37) from the heating process chamber.

53. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., transfer of a single wafer versus a plurality of wafers) is not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

54. With respect to recitation and arguments drawn to "a temperature adjusting portion adjusting a temperature of a substrate on the transferring arm", again, Applicant is relying on features not claimed in

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the rejected claims. Nakahigashi teaches that a substrate is cooled in a non-abrupt manner while on the transfer arm. This reads on claims 7 and 11.

55. Further, in response to applicant's argument that the transfer arms of the present invention and Nakahigashi are intended for different uses, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

56. Applicant's arguments with respect to a non-elected invention are not addressed here.

Conclusion

57. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703.872.9310 for regular communications and 703.872.9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km
June 30, 2003

*Primary Examined
AU 1763
P. Hannon-Zedl*